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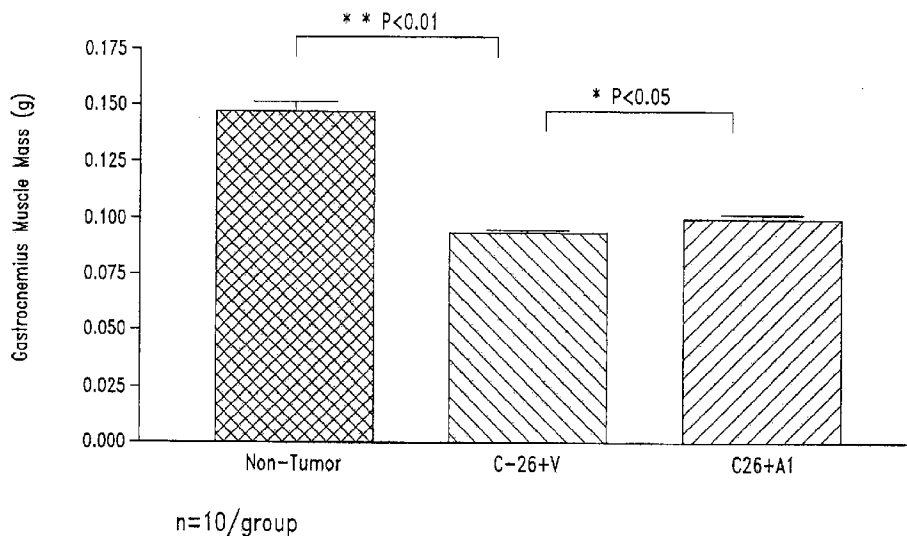
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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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[Continued on next page]

(54) Title: ANTI-ACTIVIN A ANTIBODIES AND USES THEREOF



(57) Abstract: The disclosure provides compositions and methods relating to or derived from anti-activin A binding proteins, including antibodies. In particular embodiments, the disclosure provides fully human, humanized, and chimeric anti-activin A antibodies that bind human activin A, activin A-binding fragments and derivatives of such antibodies, and activin A-binding polypeptides comprising such fragments. Other embodiments provide nucleic acids encoding such antibodies, antibody fragments and derivatives and polypeptides, cells comprising such polynucleotides, methods of making such antibodies, antibody fragments and derivatives and polypeptides, and methods of using such antibodies, antibody fragments and derivatives and polypeptides, including methods of treating or diagnosing subjects having activin A-related disorders or conditions including cachexia related to gonadal cancer, other cancers, rheumatoid arthritis, and other diseases.

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PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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- *with international search report*
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# INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2007/077923

**A. CLASSIFICATION OF SUBJECT MATTER**  
 INV. C07K16/22 A61K39/395 C12N15/13 A61P5/06 A61P9/10  
 A61P35/00 A61P37/00 A61P43/00

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**  
 Minimum documentation searched (classification system followed by classification symbols)  
 C07K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)  
 EPO-Internal, Sequence Search, CHEM ABS Data, WPI Data, BIOSIS, EMBASE

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DATABASE WPI Week 198933 Derwent Publications Ltd., London, GB; AN 1989-237375 XP002471408 & JP 01 171495 A (AJINOMOTO KK) 6 July 1989 (1989-07-06) abstract	1-30
X	RABINOVICI J ET AL: "LOCALIZATION AND REGULATION OF THE ACTIVIN-A DIMER IN HUMAN PLACENTAL CELLS" JOURNAL OF CLINICAL ENDOCRINOLOGY AND METABOLISM, vol. 75, no. 2, 1992, pages 571-576, XP002471406 ISSN: 0021-972X the whole document	1-30

Further documents are listed in the continuation of Box C.       See patent family annex.

Special categories of cited documents:

<p>*A* document defining the general state of the art which is not considered to be of particular relevance</p> <p>*E* earlier document but published on or after the international filing date</p> <p>*L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>*O* document referring to an oral disclosure, use, exhibition or other means</p> <p>*P* document published prior to the international filing date but later than the priority date claimed</p>	<p>*I* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>*G* document member of the same patent family</p>
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Date of the actual completion of the international search <b>12 March 2008</b>	Date of mailing of the international search report <b>09/06/2008</b>
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer  <p style="text-align: center; font-size: 1.2em;"><b>Bayer, Annette</b></p>
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**INTERNATIONAL SEARCH REPORT**

International application No  
PCT/US2007/077923

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GROOME N ET AL: "PREPARATION OF MONOCLONAL ANTIBODIES TO THE BETA A SUBUNIT OF OVARIAN INHIBIN USING A SYNTHETIC PEPTIDE IMMUNOGEN" HYBRIDOMA, vol. 10, no. 2, 1991, pages 309-316, XP009096753 ISSN: 0272-457X the whole document -----	1-30
X	12 October 2004 (2004-10-12), R&D SYSTEMS, INC , XP002471407 ISBN: 1-800-343-7475 Retrieved from the Internet: URL: <a href="http://www.rndsystems.com/pdf/mab3381.pdf">http://www.rndsystems.com/pdf/mab3381.pdf</a> the whole document -----	1-30

# INTERNATIONAL SEARCH REPORT

international application No.

PCT/US2007/077923

## Box No. 1 Nucleotide and/or amino acid sequence(s) (Continuation of item 1.b of the first sheet)

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, the international search was carried out on the basis of:
- a. type of material
- a sequence listing
  - table(s) related to the sequence listing
- b. format of material
- on paper
  - in electronic form
- c. time of filing/furnishing
- contained in the international application as filed
  - filed together with the international application in electronic form
  - furnished subsequently to this Authority for the purpose of search
2.  In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
3. Additional comments:

# INTERNATIONAL SEARCH REPORT

International application No.  
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## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this international search report covers allsearchable claims.
  
2.  As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
  
3.  As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-30 (all partially)

### Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

Invention 1: claims 1-30 (all partially)

Antibody A1 as disclosed and characterized by its sequences in the specification and related subject-matter.

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Inventions 2-14: claims 1-30 (all partially)

Each of the antibodies A2-A14 as disclosed and characterized by their sequences in the specification and related subject-matter.

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2007/077923

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 1171495	A	NONE	